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Hugunin

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(54) **WIRELESS MOBILE COMMUNICATION
DEVICE HAVING A SPEAKER VIBRATION
ALERT AND METHOD OF USING SAME**

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(52) **U.S. Cl.** **455/148; 455/149; 455/193.2**

(58) **Field of Classification Search** 455/148-149,
455/193.2; 340/384.1, 396.1, 404.1; 380/270-271
See application file for complete search history.

(56) **References Cited**

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(57) **ABSTRACT**

A mobile wireless communication device has a speaker that functions as a vibration alert in addition to an audio output device. The speaker is selected from a group of speakers having variation in mechanical vibration resonant frequency. A drive signal sweeps back and forth across a sweep frequency range including the variant speaker mechanical vibration resonant frequencies. The drive signal drives the speaker causing it to vibrate at the mechanical vibration resonant frequency and in turn causing the mobile wireless communication device to vibrate, thereby alerting the user. In this manner, the same drive signal can be used to vibrate each speaker at the speaker's mechanical vibration resonant frequency despite the variation in mechanical vibration resonant frequencies among the group of speakers.

26 Claims, 6 Drawing Sheets

